acslXtreme®

Getting Started Guide

Version 2.4

August 2007

The AEgis Technologies Group, Inc.

631 Discovery Drive
Huntsville, AL 35806
U.S.A.
Phone: (256) 922-0802
info@AEgisTG.com
www.acslX.com

acsl*Xtreme* Getting Started Guide

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Table of Contents

1 Product Overview 1

2 Install, Configure, Remove acslXtreme 2
2.1 System Requirements 2
2.1.1 Minimum System Requirements 2
2.2 Required 3rd Party Components 2
2.3 Installing acslXtreme 3
2.4 Additional Information and Updates 3
2.5 Configuration 3
2.5.1 Compiler Support 3
2.5.2 IDE configuration 4
2.6 Removing acslXtreme 4

3 Registration and Licensing 6
3.1 Trial License 6
3.2 Single User and Multi User License 6
3.2.1 Requesting and Saving the License Key File for SUL or MUL 6
3.3 Floating Network License 6
3.3.1 Requesting and Saving the License Key File for FNL 6
3.3.2 Setting up the License Server for Floating Network License 6
3.3.3 Setting up the FLEXlm Directory 7
3.3.4 Starting the FLEXlm License Server 7

4 acslXtreme Examples 8
4.1 Starting acslXtreme 8
4.2 Spring Example (CSL language model) 8
4.3 Aircraft Arresting Gear Example (Block Diagram Model) 12

5 Working with acslXtreme 16
5.1 Creating a Workspace 16
5.2 Using the Block Libraries of PowerBlocks 18
5.3 Creating a New Block 19
5.4 Adding Ports 22
5.5 Setting Constants 23
5.6 Wiring the Block Diagram 24
5.7 Building and Running the Model 24

6 Plotting 26
6.1 Creating plots 26
6.2 Plot Properties 28

7 Additional Information 29
7.1 acslXtreme User's Guide 29
7.2 Technical Support 29

1 Product Overview

acslXtreme is the sophisticated, next generation tool for modeling and simulation of continuous dynamic systems and processes. acslXtreme provides the power and flexibility to represent the world's most complex systems accurately and completely. Simple to learn, easy to use, acslXtreme is a refreshingly modern application built on top of the latest technologies including Microsoft.NET and XML.

Incorporating acslXtreme into your research and development process will improve productivity, reduce risk, and encourage innovation.

The predecessor to acslXtreme, ACSL, was one of the first commercially available modeling and simulation languages designed for simulating continuous systems. ACSL has been tested and verified with over 25 years of continuous use by the world's most demanding simulation professionals.

2 Install, Configure, Remove acslXtreme

2.1 System Requirements

This section lists the hardware and software requirements for installation of acslXtreme.

2.1.1 Minimum System Requirements

To install and run acslXtreme, the computer system must meet the following minimum requirements:

Operating System

- Microsoft Vista, Microsoft Windows XP or Microsoft® Windows® 2000
- Latest Windows service pack and critical updates available from Microsoft Windows Update Web page

CPU Requirements

- Pentium 4 @ 2 GHZ or equivalent

Minimum RAM Requirements

- 512 MB (or higher recommended)

Hard Disk

- Hard disk space required to install 300 MB
- Hard disk space required to operate 150 MB

Display

- 1024 x 768, 32 bit color recommended

Network

- Network card required for its unique hostid (MAC address) to enable the licensing system. Computer system does not have to be connected to a network.

Input Device

- Microsoft mouse or compatible pointing device

Other

- Microsoft Internet Explorer® 6.0 or later is required
- Microsoft.NET Framework 1.1 or later is required

2.2 Required 3rd Party Components

acslXtreme is built on top of Microsoft's .NET framework and thus requires the framework to be installed prior to operation. The installation and version of Microsoft.NET Framework is automatically checked when installing acslXtreme.

Internet Explorer version 6 or later is also required by acslXtreme. To download the latest versions visit the www.microsoft.com.

2.3 Installing acslXtreme

To install acslXtreme double click on the axtsetup_2.4.0.exe file that was either downloaded from the acslX.com website or found on the acslX CD-ROM.

2.4 Additional Information and Updates

For information about the product, upcoming events and available services please check the acslXtreme website at www.acslX.com.

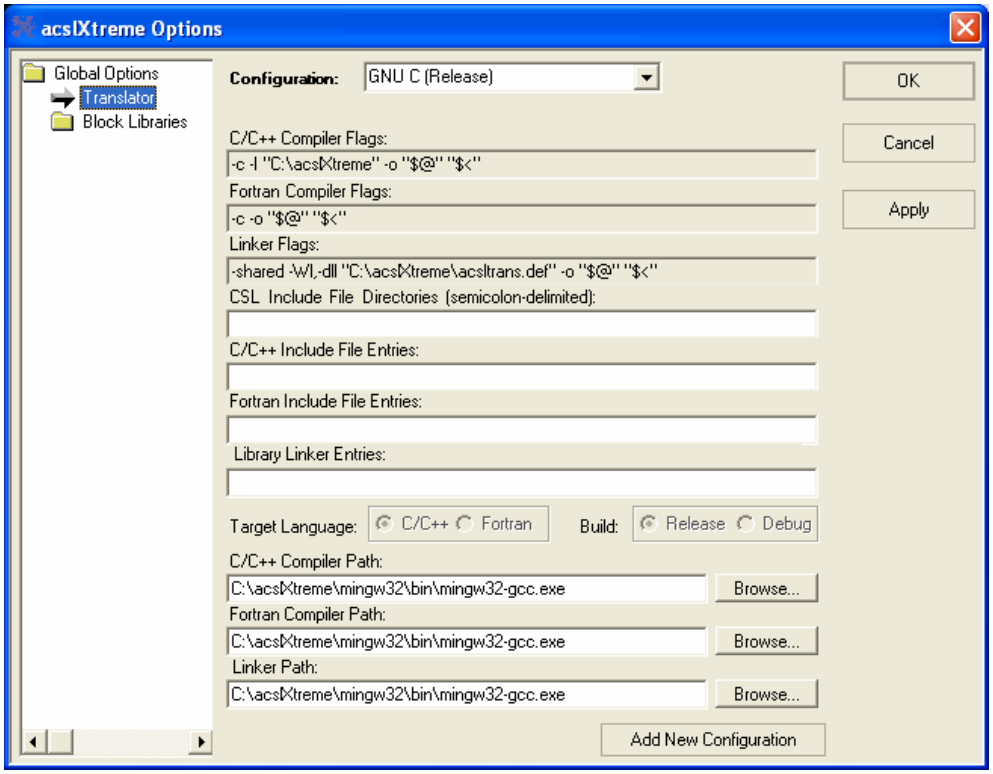
As we are continuously improving acslXtreme, it is recommended that you check the website often for new releases and updates.

2.5 Configuration

2.5.1 Compiler Support

acslXtreme provides and installs GNU C as the default compiler. acslXtreme also supports Visual Studio.NET C++ (v7), Compaq Digital Fortran (v6.5) and Visual Studio C++ (v6) compilers.

To access the acslXtreme translator options dialog box, choose the **Edit > Options...** menu item in acslXtreme. Select the **Translator** option. The following dialog box will be displayed.



The default configuration is the GNU C compiler. The paths for this configuration were setup during installation. To choose a different configuration, scroll down the configuration list and choose the desired compiler and confirm that the compiler and linker paths and flags point to the proper locations. GNU C is the only compiler supplied on the distribution CD with acslXtreme.

acslXtreme uses the command line version of the supported compilers (VS v6, VS.NET, Compaq Visual Fortran v6.5). Special libraries are required for the command line version and the path to these libraries **are not added** by default when the compilers are installed.

In order to use these specific compiler options, adding the correct path to the system environmental variables may be required. Listed below is the library each compiler requires along with the default path to that library.

Compaq Visual Fortran: MSPDB60.DLL
C:\Program Files\Microsoft Visual Studio\Common\MSDEV98\BIN

MS Visual Studio, v6: MSPDB.DLL
C:\Program Files\Microsoft Visual Studio\Common\MSDEV98\BIN

MS Visual Studio .NET, v7: MSPDB70.DLL
C:\Program Files\Microsoft Visual Studio .NET\Common7\IDE

MS Visual Studio .NET 2003: MSPDB71.DLL
C:\Program Files\Microsoft Visual Studio .NET 2003\Common7\IDE

See your system administrator for information on how to set system environmental variables.

2.5.2 IDE configuration

acslXtreme employs a user-friendly Integrated Development Environment (IDE). By the very nature of the application, acslXtreme is required to manage a large and diverse set of information requiring multiple windows. acslXtreme's window management and docking capability allows for management of this information in a friendly manner while providing instant access to everything required to design, build, execute and analyze models and simulations. It is important to be familiar with acslXtreme's docking windows before proceeding with the application.

It is recommended to review the acslXtreme User's Guide prior to working through the following examples. Please STOP now and review Chapter 2 of the User's Guide. This guide can be found on the installation CD or in the documentation folder of acslXtreme's installation directory.

Note that acslXtreme has a default window configuration and this can be customized by the user and will be saved when exiting acslXtreme.

2.6 Removing acslXtreme

Always use the **Add or Remove Programs** utility to uninstall the acslXtreme software and to ensure that all the installed software components are correctly removed. This will also remove the acslXtreme settings from the Windows Registry.

1. To uninstall the software, click **Start > Control Panel**
2. Double-click **Add or Remove Programs**.
3. Select **acsIXtreme** from the list of installed software and select the **Remove** button.

3 Registration and Licensing

acslXtreme has four different license types: Trial License, Single User License (SUL), Multi User License (MUL), and Floating Network License (FNL). SUL and MUL are controlled through the same licensing process that is described in chapter 3.2.

3.1 Trial License

acslXtreme is configured with a one-time trial license that will be valid for fourteen (14) days beginning at the time of the initial installation of acslXtreme.

3.2 Single User and Multi User License

The only step to complete for a Single User or Multi User License is to request a license key file and to place it into the acslXtreme installation directory (by default C:\Program Files\Aegis Technologies\acslXtreme).

3.2.1 Requesting and Saving the License Key File for SUL or MUL

Contact License Support via one of the following methods to request a license key file:

E-Mail:

- License@AEgisTG.com

Phone:

- (256) 922-0802

Fax:

- (256) 922-0904

3.3 Floating Network License

3.3.1 Requesting and Saving the License Key File for FNL

Contact License Support via one of the following methods to request a license key file:

E-Mail:

- License@AEgisTG.com

Phone:

- (256) 922-0802

Fax:

- (256) 922-0904

3.3.2 Setting up the License Server for Floating Network License

The acslXtreme Floating Network License requires FLEXlm® version 8.0 or later to be installed on the license server.

To review information about FLEXlm, see Macrovision® Software's website at:

http://www.macrovision.com

Also, the current version of the FLEXlm End User's Manual can be found in the PDF format on the acslXtreme installation CD or the latest version can be found at the website listed above.

In the case of a FLEXlm error message, please refer to the FLEXlm End User's Manual for complete explanation.

The acslXtreme product CD-ROM provides the FLEXlm distribution files to run a License Manager on a Windows 32-bit operating system. The required files are located in a folder called **\FLEXlm Server\i86_n3**.

The FLEXlm distribution files consist of the following:

lmgrd.exe	The license manager daemon
lmtools.exe	GUI based FLEXlm utility program (Windows Version only)
lmutil.exe	Command line based utility program
aegissim.exe	AEgis' vendor daemon

3.3.3 Setting up the FLEXlm Directory

Before beginning this section, determine whether the license server has FLEXlm 8.0 or higher installed. The following instructions apply to both PC and UNIX installations.

1. For a new installation, create a new directory for the FLEXlm files. If a previous installation of FLEXlm 8.0 or higher exists, find the folder on the license server where the lmgrd.exe file is located.

2. Insert the acslXtreme products CD into the CD-ROM drive and access the CD-ROM drive, and browse to the **\FLEXlm Server\i86_n3** folder.

or

2. Download the the FLEXlm files from the Tech Support Download site.

3. Copy all of the files in **FLEXlm\i86_n3** to the folder created in step 1 on the server. If a previous installation of FLEXlm 8.0 or higher exists, copy only the "aegissim.exe" file from the CD to the folder on the server.

3.3.4 Starting the FLEXlm License Server

Refer to the FLEXlm End User's Manual, Chapter 6, The License Manager Daemon, for detailed instructions on starting the FLEXlm License Server.

4 acslXtreme Examples

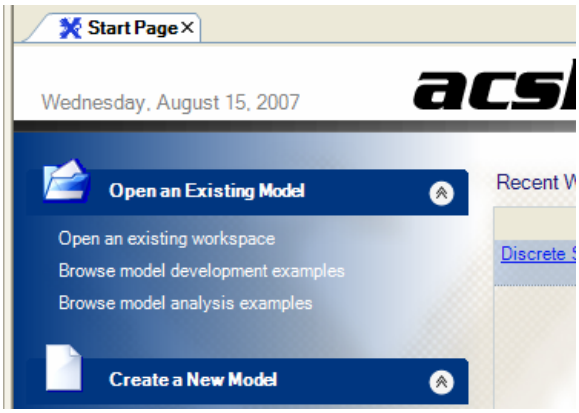
This chapter will demonstrate how to open and run several examples provided with the acslXtreme software. Multiple example files are located in the **Example** folder located in the installation directory. It is assumed that the user has reviewed Chapter 2 of the acslXtreme User's Guide.

4.1 Starting acslXtreme

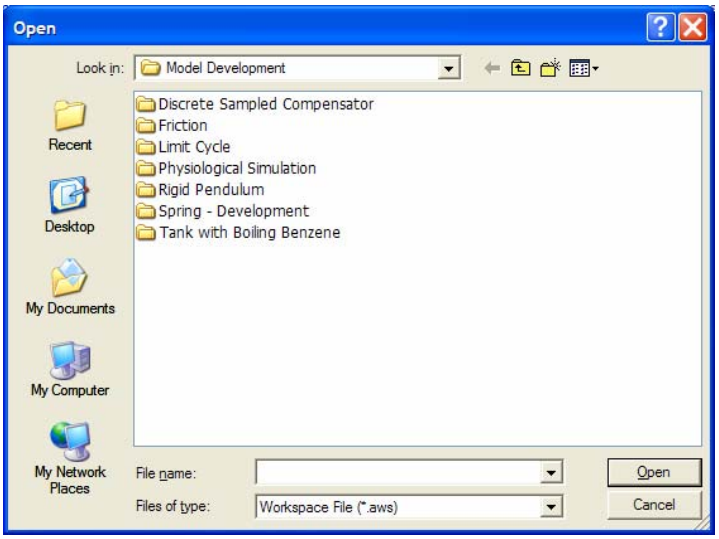
1. Select **Start > Program Files > acslXtreme > acslXtreme** or click on the acslXtreme Icon on the desktop

4.2 Spring Example (CSL language model)

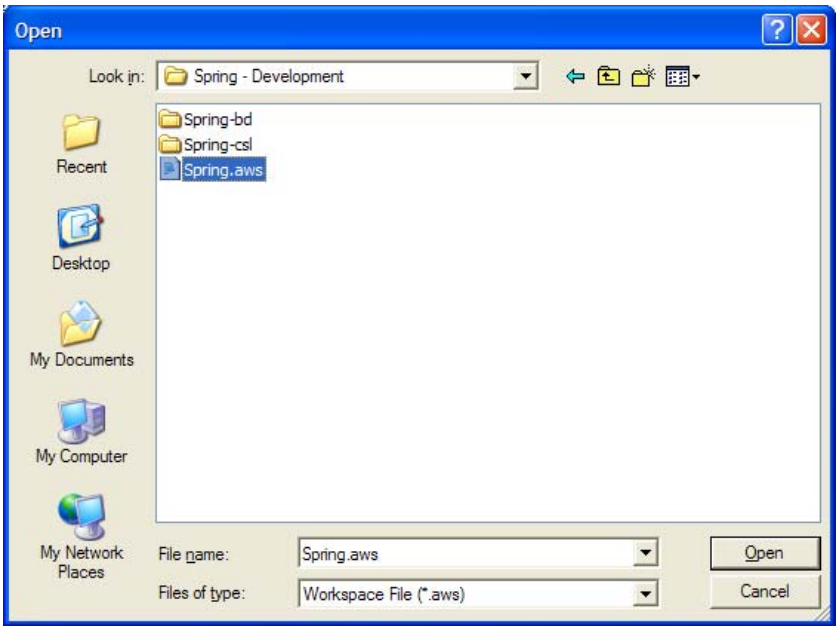
1. After acslXtreme has started, click on **Browse Model Development Examples** on the Start Page.



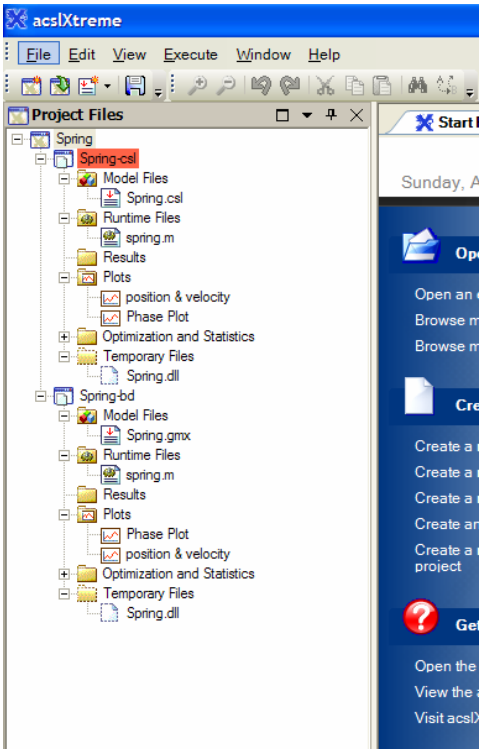
2. Open the **Spring** folder by double clicking on the folder icon next to the folder name.



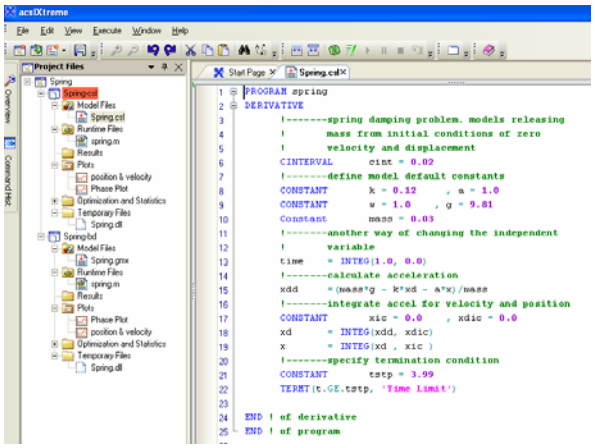
3. Select the Workspace file "Spring.aws", then click the **Open** button.



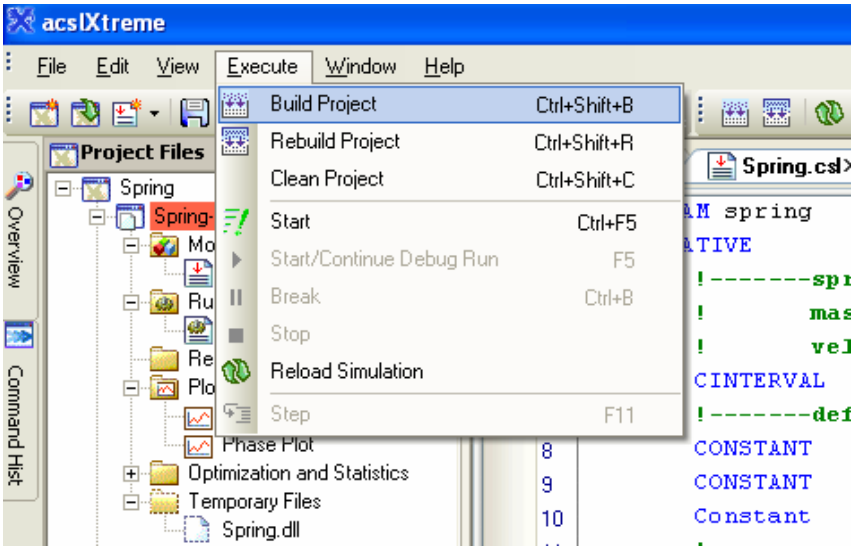
4. The tree structure populates with the project and all existing related files. The Spring model contains both a CSL and block diagram model.



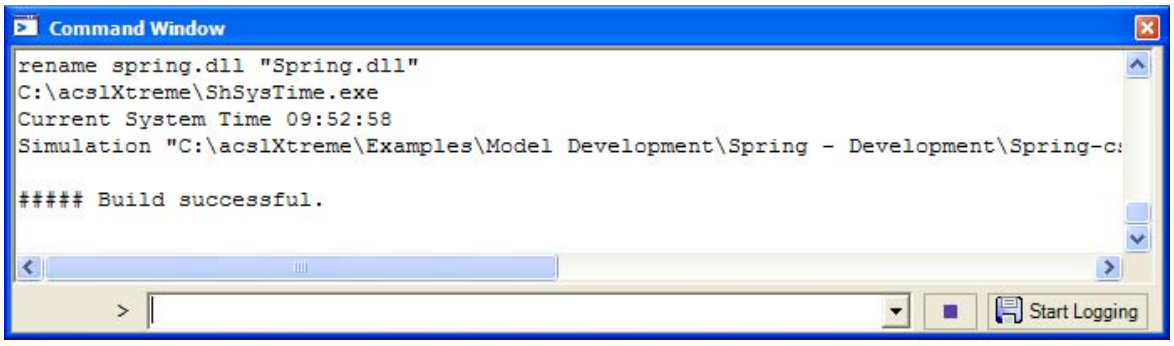
5. Double-click on the "Spring.csl" file in the treeview; this will open the file containing the csl code.



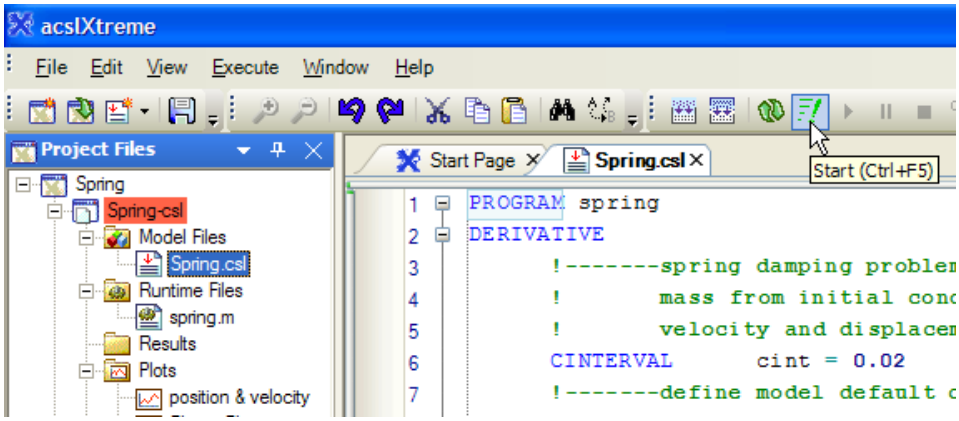
6. Click on the **Execute** menu and choose the **Build Project** option



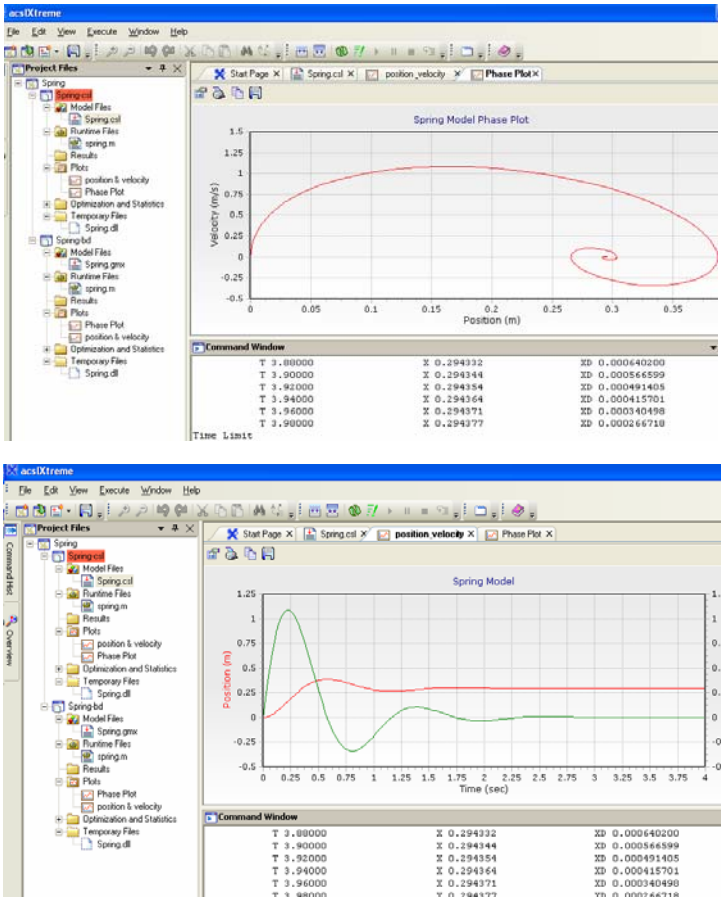
7. Information from the Translation and Build stage can be seen in the **Command Window**.



8. After the Build Successful message is displayed, click on the start icon to execute the simulation.



9. Two plot objects will appear. To view the second plot, click on the non-highlighted **Plot** tab located near the spring-csl tab

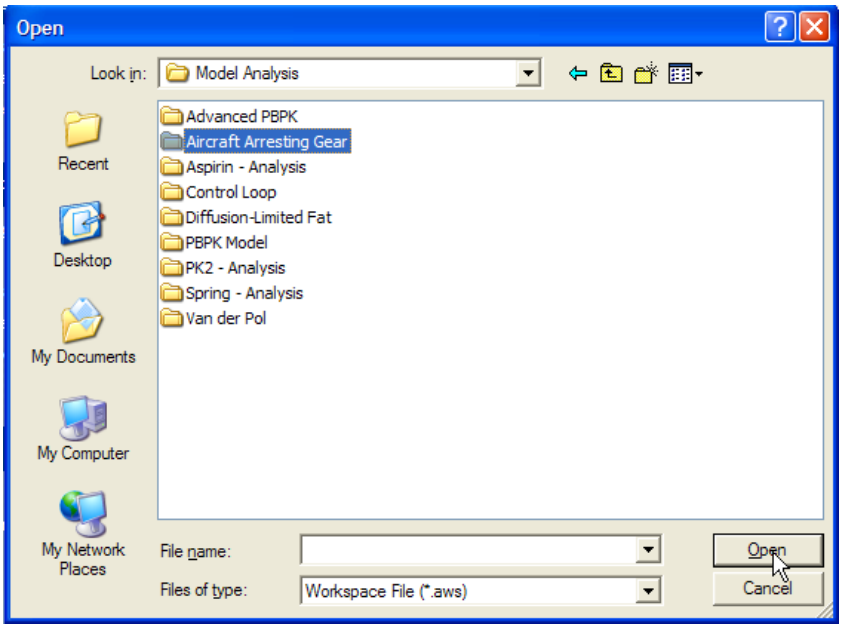


Editing the plot window is discussed in more detail in the acslXtreme User's Guide.

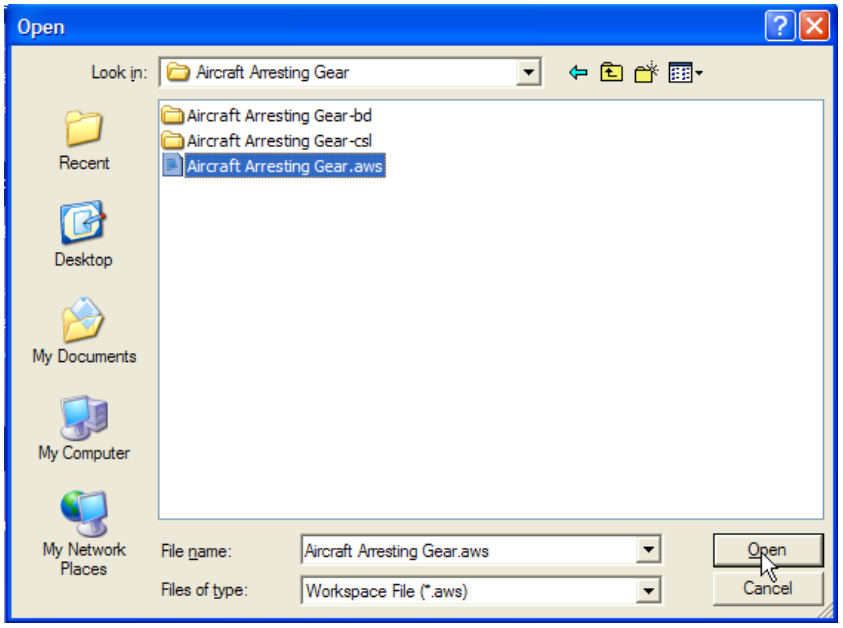
10. Select **File > Close Workspace** to exit the spring workspace.

4.3 Aircraft Arresting Gear Example (Block Diagram Model)

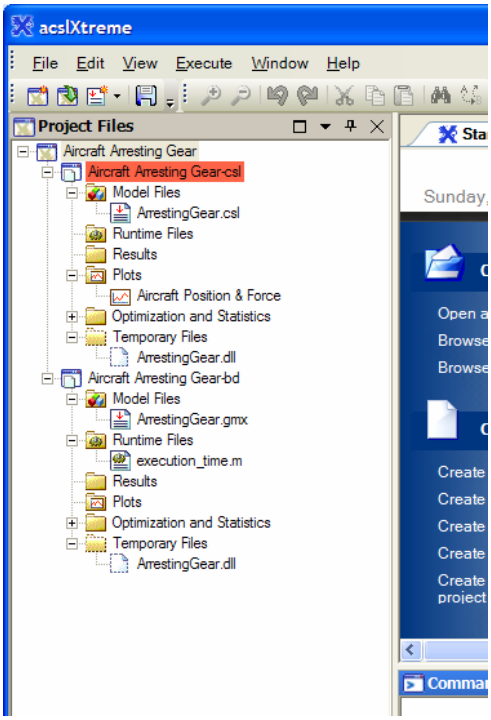
1. Click on **Browse Model Analysis Examples** on the Start page.
2. Select the "Aircraft Arresting Gear" folder.



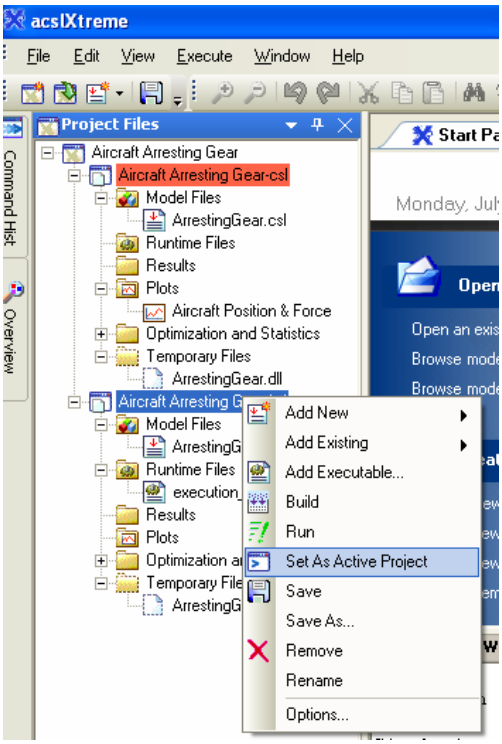
3. The **Open** window displays:



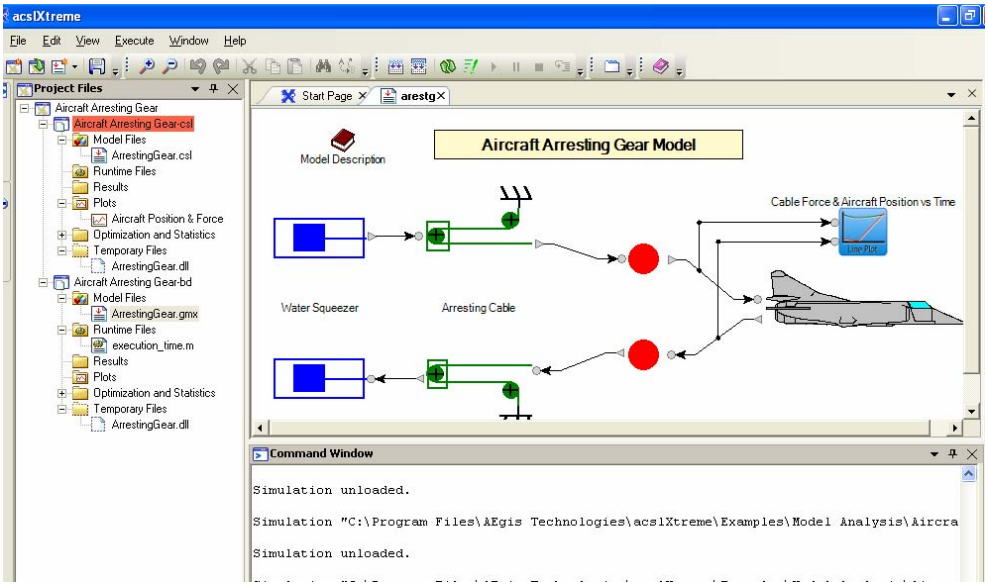
4. Select the Workspace file "Aircraft Arresting Gear.aws".
5. Click the **Open** button or double-click the icon next to the workspace name. The tree structure populates with the project and all existing related files. This workspace contains both a CSL and a block diagram project.



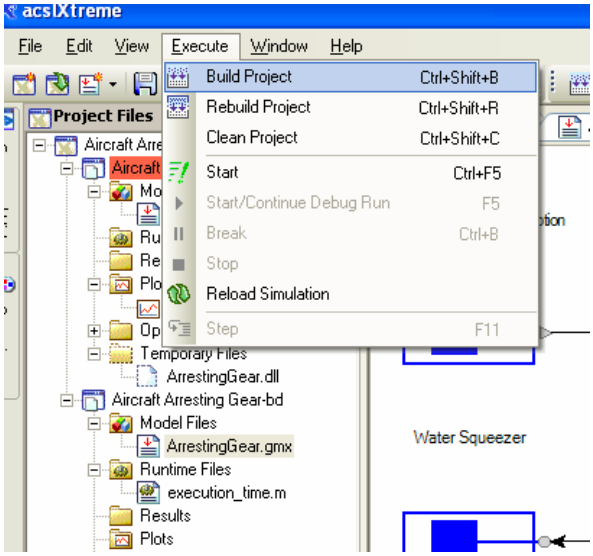
6. acslXtreme allows multiple projects in each workspace. The active project is currently Aircraft Arresting Gear-csl, it is highlighted in red. To switch the active project to the block diagram version, right click on Aircraft Arresting Gear-bd and choose **Set As Active Project**.



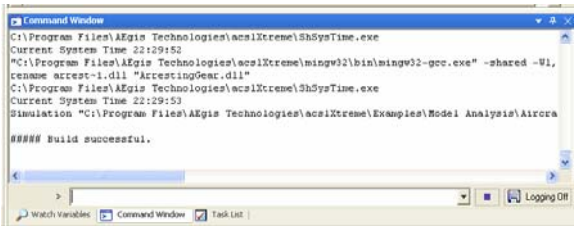
7. Double click on the "aresting.gmx" file and it will open into the fixed work area.



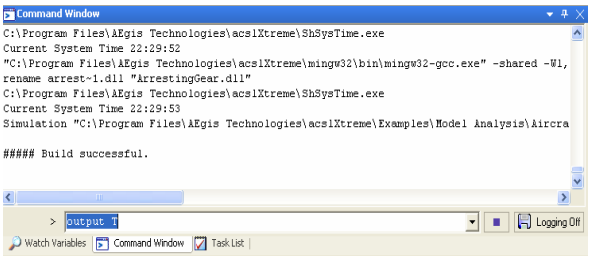
8. Click on the **Execute** menu and choose the **Build Project** option



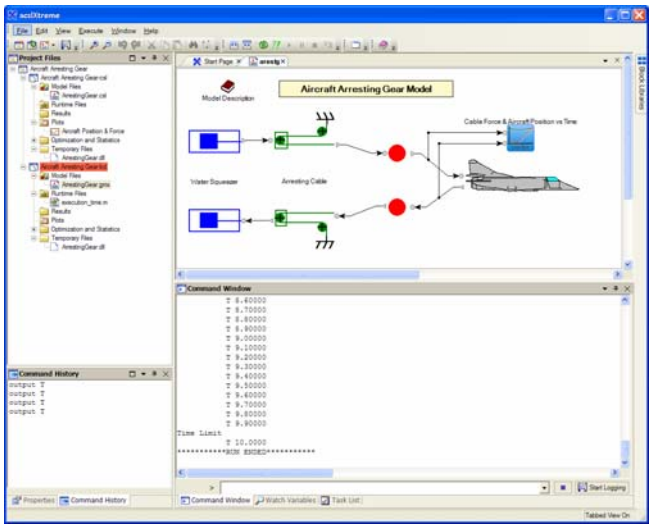
9. Information from the Translation and Build stage can be seen in the **Command** window.



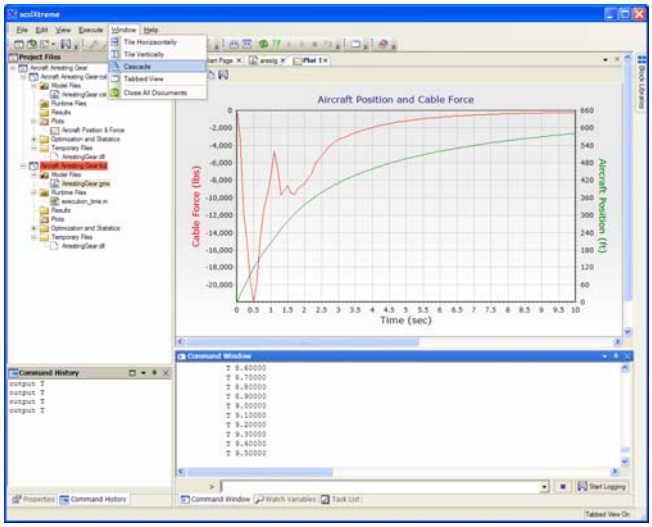
10. The **Command Window** displays the simulation control prompt. From this command line the user can access and set model variables and run the simulation. Entering `***output T***' at the prompt will print out the variable t (time) to the screen while the simulation is running.



11. Type '***start'*** at the command prompt, or press the icon to run the simulation. Click on the **Command Window** tab to see the time increment scroll as the simulation runs.



12. Now go to the diagram work area for arestg and double click on the **Plot** block. Select the **Window** > **Cascade** menu item to undock the view and allow the windows to be moved and resized as desired.



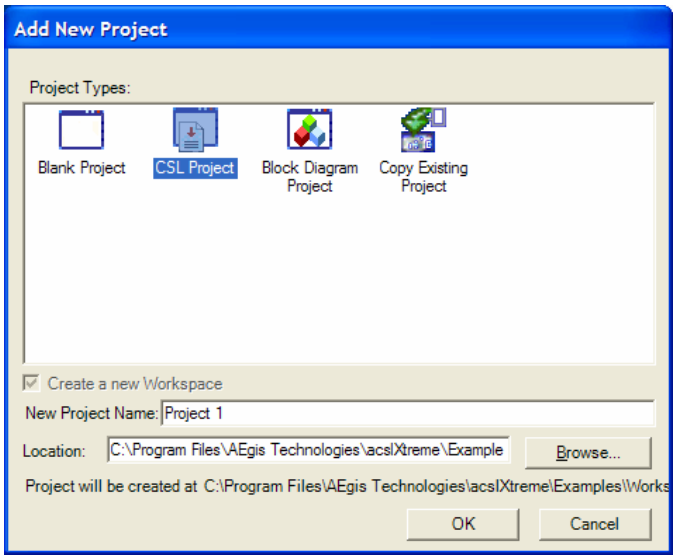
13. Click on **File > Close Workspace** to exit the Aircraft Arresting Gear workspace.

5 Working with acslXtreme

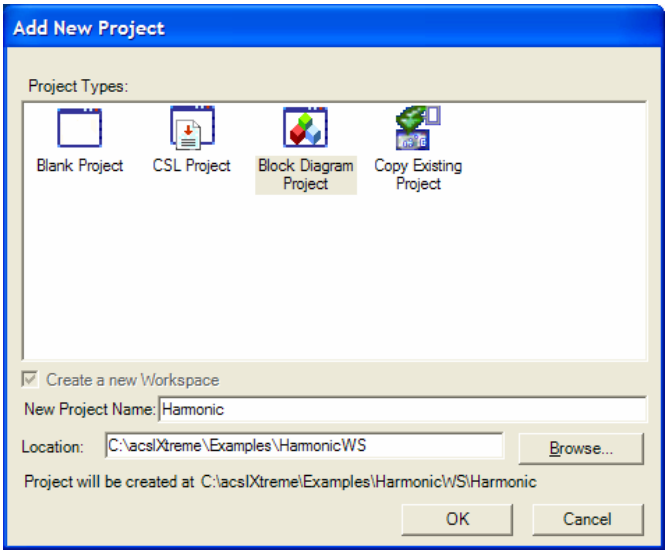
This chapter outlines the basics for maneuvering through acslXtreme to build and run new models. The following steps will guide the user in the development of a simple harmonic model.

5.1 Creating a Workspace

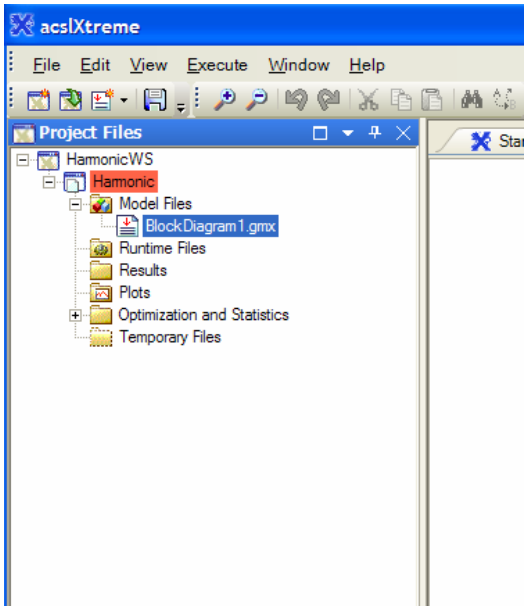
1. Start acslXtreme by clicking **Start>Programs > AEgis Technologies > acslXtreme > acslXtreme** or click on the **acslXtreme** icon on the desktop.
2. On the **File** menu, select **New Workspace**. The **Project Wizard** dialog displays.



3. Select the **Block Diagram Project** icon and then enter the project name, **Harmonic** in the **Name** field. Enter **HarmonicWS** for the name and path of the desired workspace in the **Location** field and click **OK**.



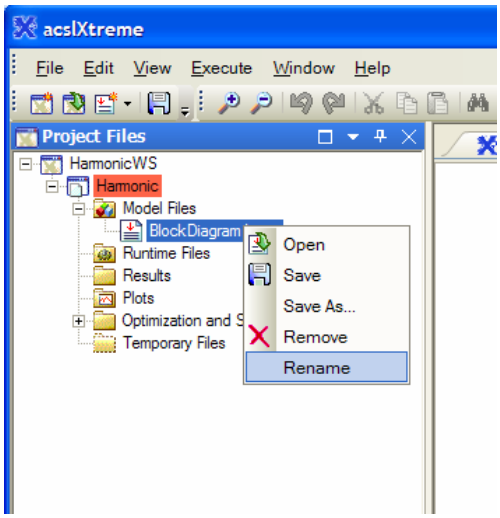
4. This will create a workspace (**HarmonicWS**) that contains a block diagram project (**Harmonic**) and model file (**BlockDiagram1.gmx**).



5. Right-clicking on any level in the Project Files tree structure will display actions that apply to that specific level of the tree.

6. Right-click on **BlockDiagram1.gmx** and select **Save**.

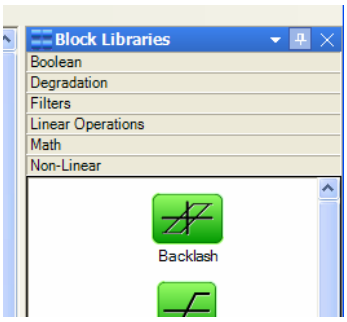
7. Right-click on **BlockDiagram1.gmx** and select **Rename** to change the name for the model to **HarmonicBD.gmx**.



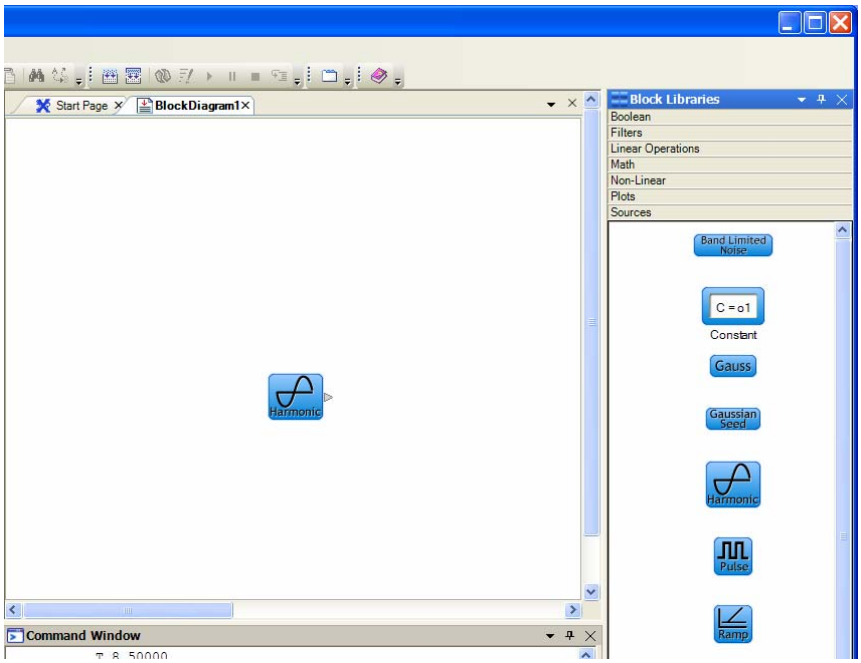
8. Double-click on the **HarmonicBD.gmx** file in the tree. The empty block diagram window will open in the **Start Page** work area and is ready for construction of the model.

5.2 Using the Block Libraries of PowerBlocks

1. acslXtreme has the capability for retractable window views. If the Block Libraries view is retracted, place the mouse cursor over the **Block Libraries** tab that is in the upper right section of the screen; the **Block Libraries** view will appear. Since this will be used to create a model, click on the "pushpin" at the top of the view, this will keep the Libraries open while in use.

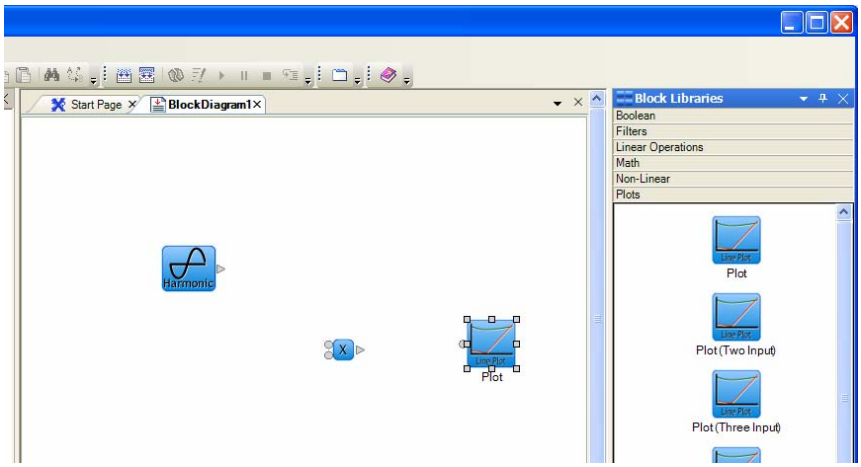


2. In the **Block Libraries** view, click on the **Sources** bar, locate and click on the **Harmonic** block and drag it to the diagram window.



3. From the **Block Libraries** view, click the **Math** library. Locate, click and drag the **Multiply** block into the diagram window.

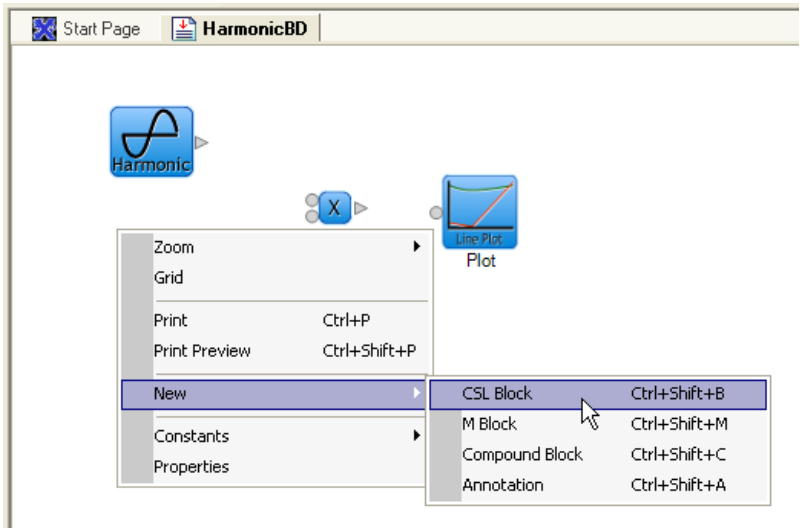
4. From the **Block Libraries** view, click the **Plots** library. Click and drag the **Plot** block into the diagram window



5. Click on the "pushpin" to the right of the **Block Libraries** title bar, this will allow the libraries view to retract when not in use.

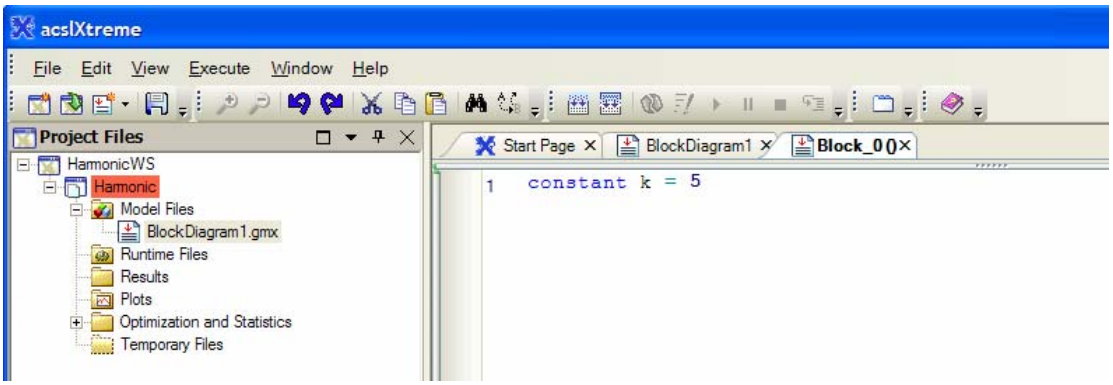
5.3 Creating a New Block

1. Create a new block by right-clicking in the background of the diagram work area and choosing **New > CSL Block**.

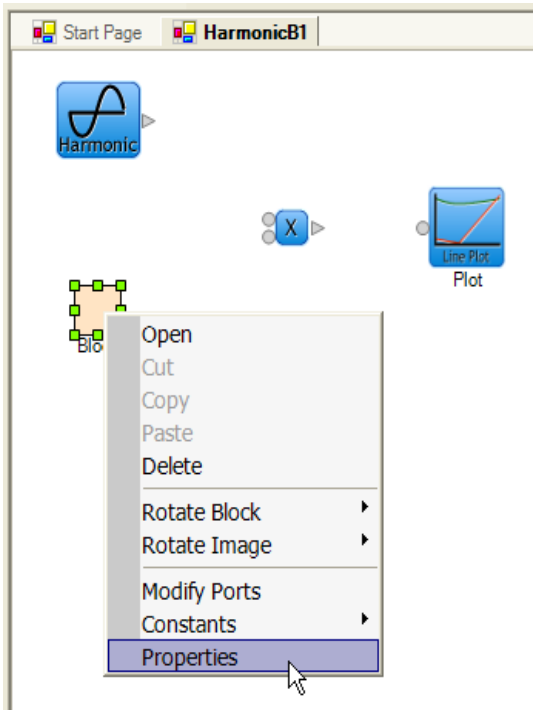


2. Double-click on the **Block** that was just created. This will display the code editor.

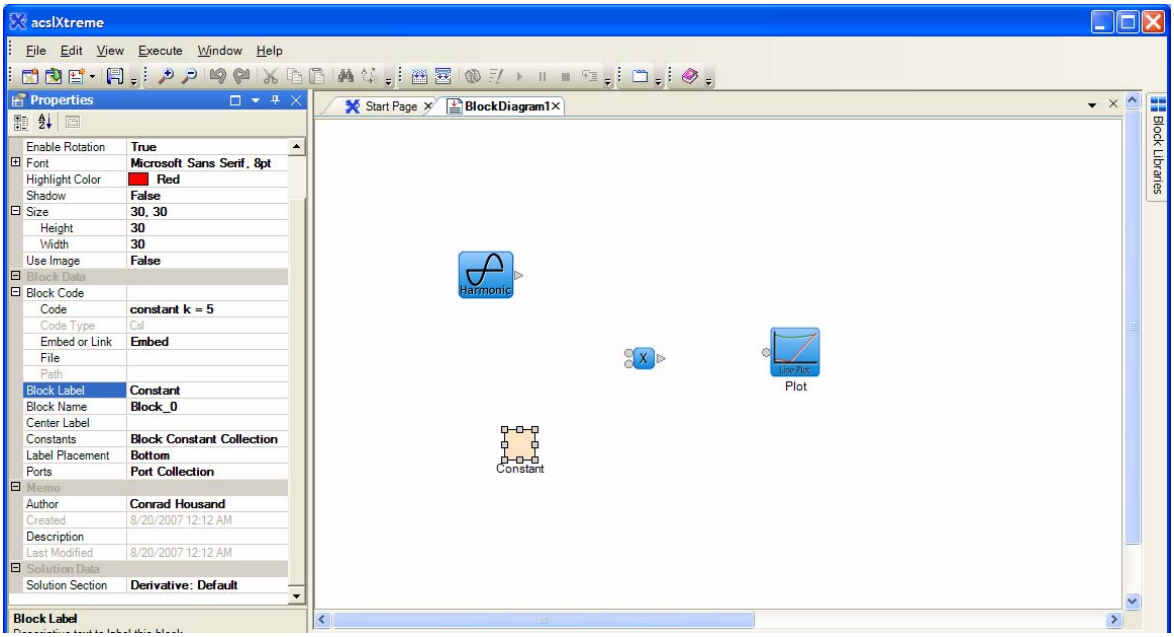
3. Click in the **Block Code Editor** window, then type the following line: **Constant k = 5**. Exit the code editor window by clicking the **X** in the upper-right corner of the window.



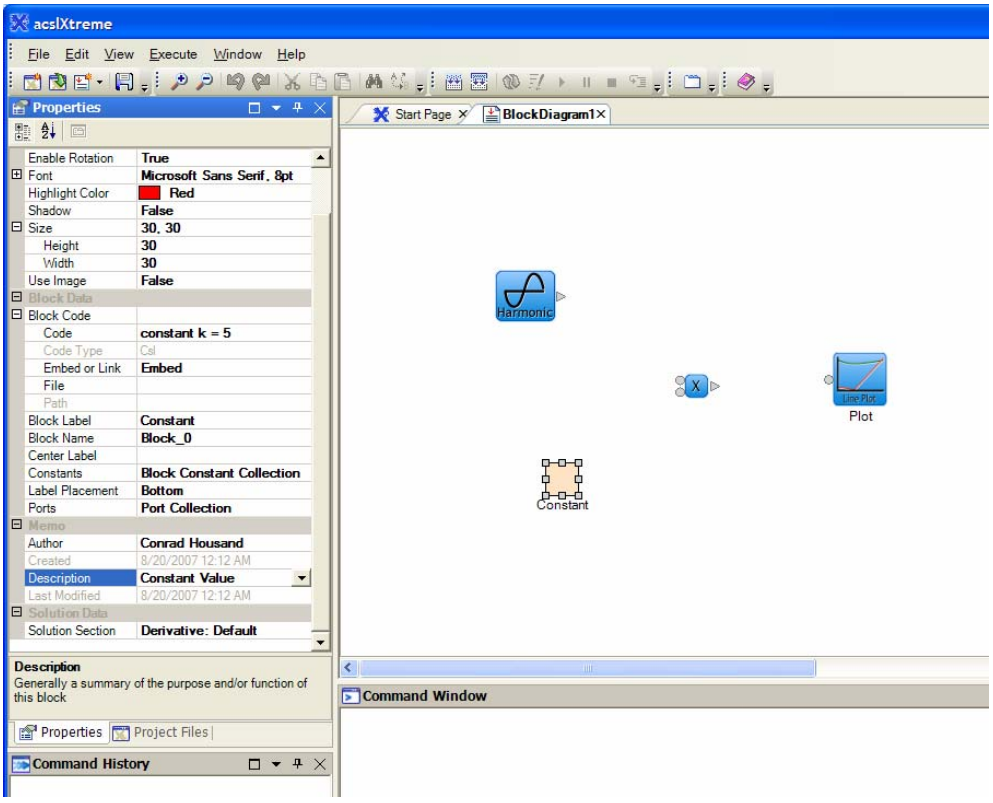
4. Right click the new **Block** in the diagram and select **Properties**, the **Properties** view containing the properties of the block will appear. All block attributes can be set from the **Properties** view including configuration of the block appearance, name, labels, ports, block type, constants, notes, etc.



5. Click on the **Block Label** in the **Properties** view and change the text from **Block** to **Constant**. Upon pressing enter, the label that appears under the block in the diagram view will change to **Constant**.

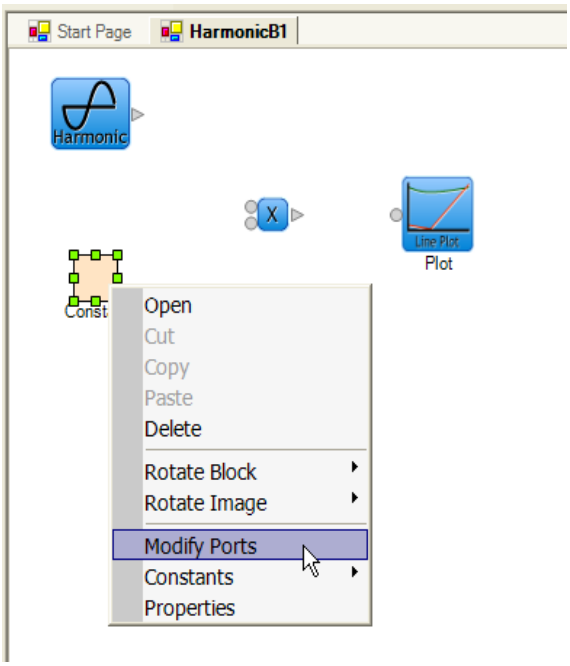


6. Click on the **Description** field under **Memo** in the **Properties** view and change the description to **Constant Value**.



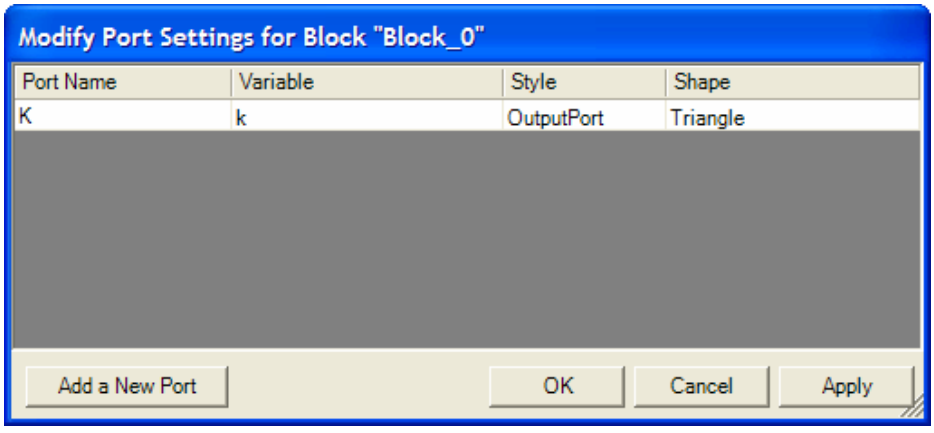
5.4 Adding Ports

1. To add an output port to the **Constant Block**, right-click on the block, then click **Modify Ports** from the pop-up menu. This displays a dialog box that controls the port assignments and properties.

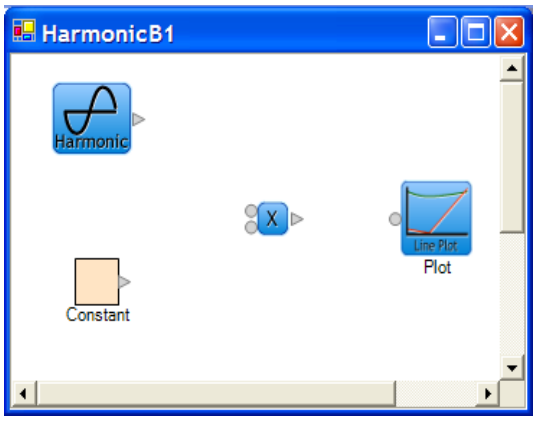


2. Click on the button **Add a New Port**. A line with default values displays.

3. First, in the **Style** column, click on the text, InputPort, to choose the type of port (input or output) from the drop down list - select **Output**. This initial selection allows the variables that are displayed in the **Variable(s)** column to be filtered by the given type. Now edit the **Variable(s)** column to assign the port to a variable contained in the block code using the pull down selection, choose **k**. In the **Port Name** column type the name of the port, **K.** Click on the **Shape** column to change the shape of the output port to a **Triangle**.

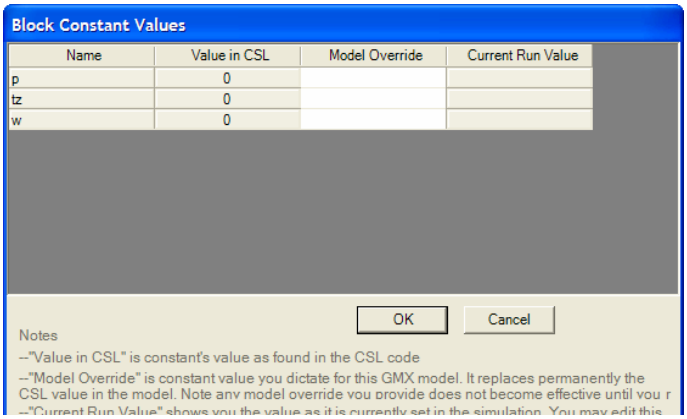


4. Click the **OK** button. The port displays on the right side of the block.

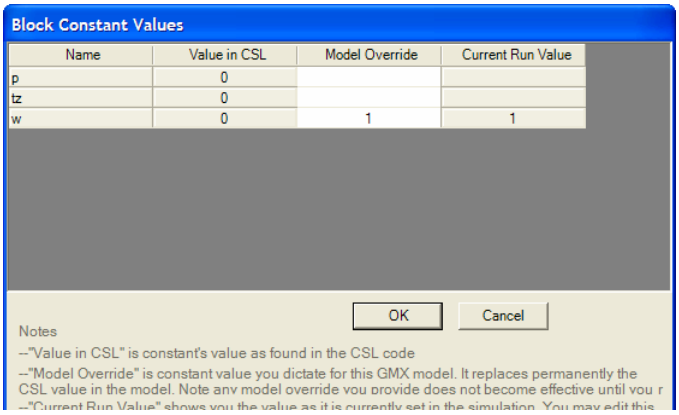


5.5 Setting Constants

1. Click on the **Harmonic** block to select its properties. In the **Properties** window, click on the **Constants** field, then click on the "**...**" to the right of the **Constants** field. This will cause the **Block Constant Values** table to be displayed.

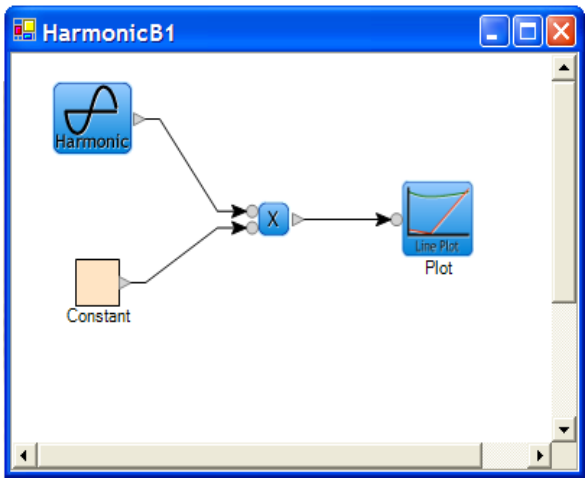

Block Constant Values
Name
Value in CSL
Model Override
Current Run Value
p
0
tz
0
w
0
OK
Cancel
Notes
--"Value in CSL" is constant's value as found in the CSL code
--"Model Override" is constant value you dictate for this GMX model. It replaces permanently the CSL value in the model. Note anv model override vou provide does not become effective until vou r

2. Change the **Model Override** of **W** to **1**, Click the **Apply** button and then click the **OK** button. (Refer to the User's Guide for description of CSL Default, Model Override and Run Override values.)



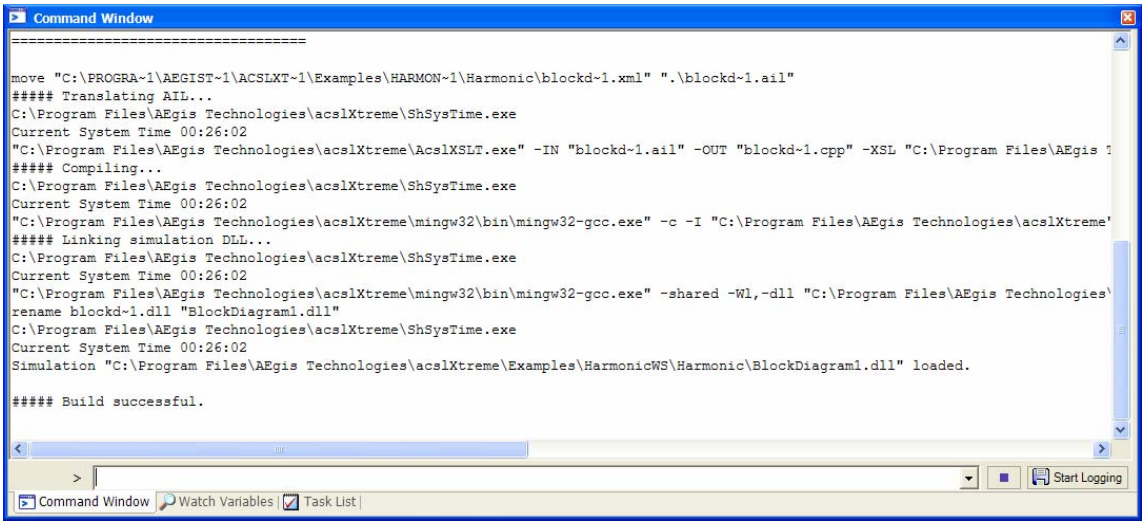
5.6 Wiring the Block Diagram

1. Click and drag a wire from the output port of the **Harmonic** block until it connects to the input port of the **Multiply** block. Repeat this process and wire the remaining ports together. Refer to the picture below for connections.

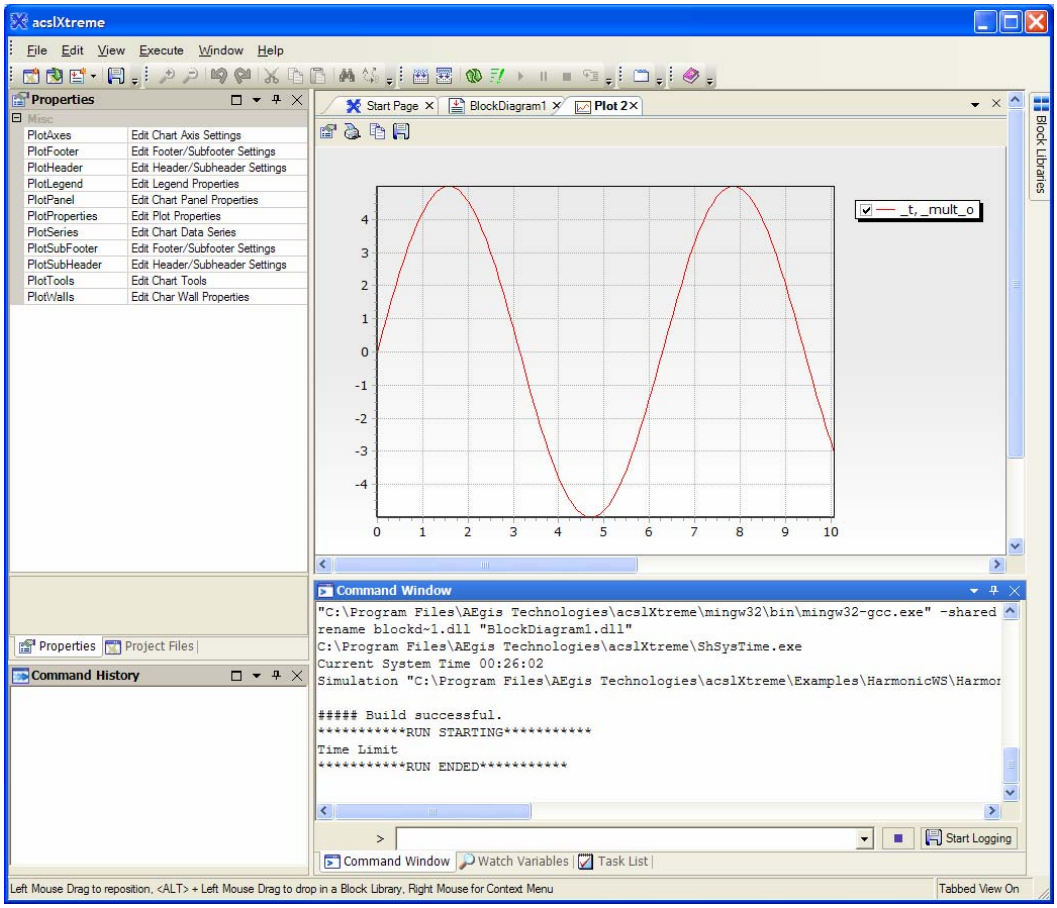


5.7 Building and Running the Model

1. To build the model, click on the Build icon located on the toolbar. Build-related information is displayed in the **Output** view as the translation and compilation occurs.



2. To run the model, click on the **Run** icon located on the toolbar. The progress can also be monitored in the **Output** view. Once the run is complete, double-click on the **Plot** block. The **Plot** displays in a new tab in the workspace.



NOTE: The plot is not saved between work sessions. If the workspace is closed and then later reopened, the plot will need to be recreated after running by clicking on the plot block.

3. From the **File** menu, choose **Close** to close the workspace. At the build step the workspace was automatically saved. If you have made further changes since that point, a dialog box will prompt the user to save the workspace.

4. From the **File** menu, chose **Exit** to exit acslXtreme.

6 Plotting

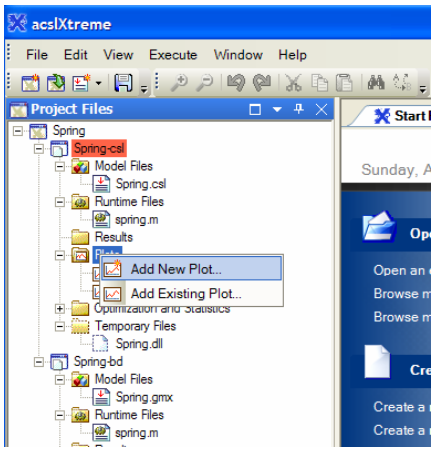
This chapter shows the basics for creating a plot in the Project File View and then accessing the plot editing tools. For further information on Plotting, see Chapter 5 in the acslXtreme User's Guide.

6.1 Creating plots

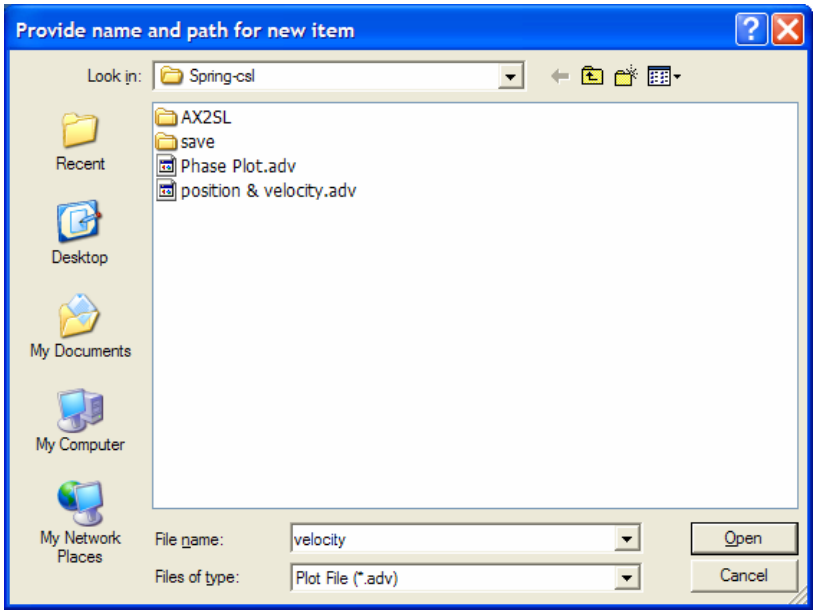
1. Start acslXtreme by clicking **Start > Programs > acslXtreme > acslXtreme** or click on the **acslXtreme** icon on the desktop

2. Open the "Spring-csl" example (detailed in Section 4.2), then build the model by clicking the **Build** icon

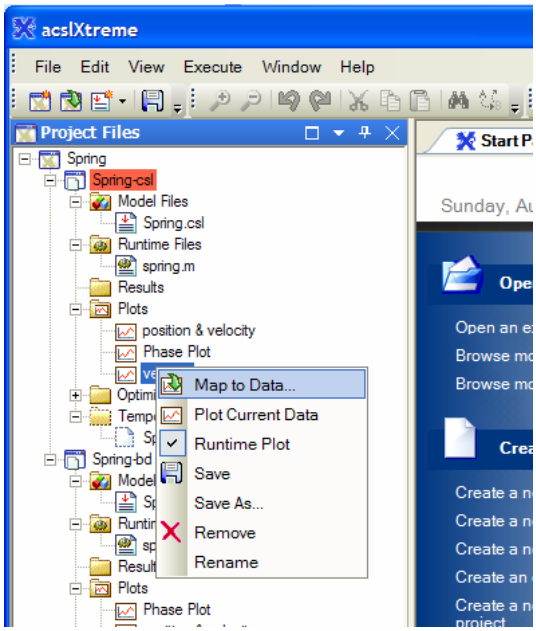
3. In the **Project Files** view, right-click on the **Plots** folder and choose **Add New Plot**.



4. The **Provide name and path for new item** dialog displays. In the **File name** field, type the name of the plot file, **Velocity**. Click the **Open** button.

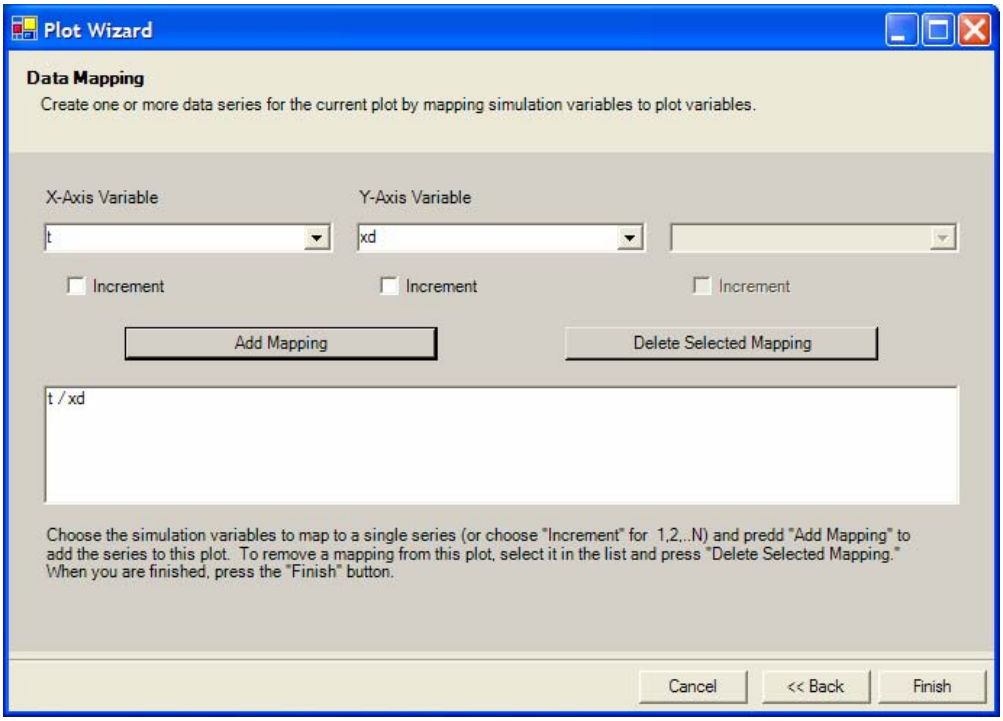


5. Right-click on the new **Velocity** plot icon and choose **Map to Data**.



6. The **Plot Wizard** displays. Follow the prompts. For this example click the **Next** button to choose the default plot type.

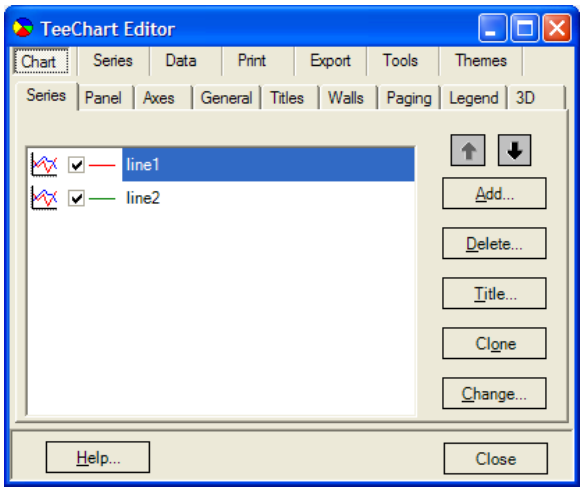
7. In the **Data Mapping** dialog box choose the variables you want to plot. In the **Mapped to X** box choose the variable `t' and in the **Mapped to Y** choose the variable `xd'. Click the **Add Mapping** button, and then click the **Next** button. Follow the prompts and click "Finish" to close the **Plot Wizard**


Plot Wizard
Data Mapping
Create one or more data series for the current plot by mapping simulation variables to plot variables.
X-Axis Variable
Y-Axis Variable
t
xd
Increment
Increment
Increment
Add Mapping
Delete Selected Mapping
t / xd
Choose the simulation variables to map to a single series (or choose "Increment" for 1,2,..N) and predd "Add Mapping" to add the series to this plot. To remove a mapping from this plot, select it in the list and press "Delete Selected Mapping." When you are finished, press the "Finish" button.
Cancel
<< Back
Finish

8. Click the run icon and the plots will appear during runtime.

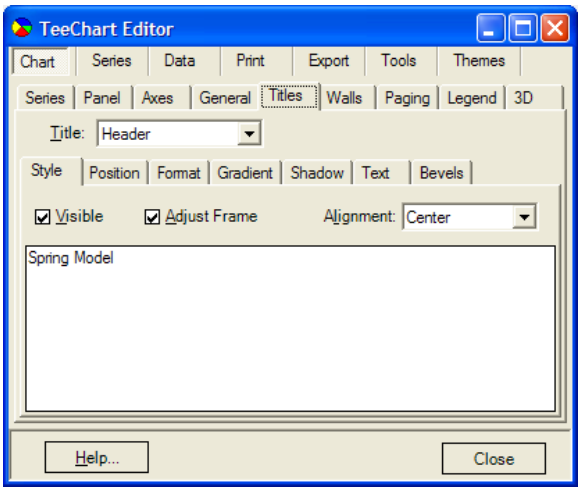
6.2 Plot Properties

1. Double-click on the background of the plot. This will display the **TeeChart Editor Properties** dialog box.



2. All the properties for the plots can be set from the plot **Editing** dialog box. Plots and/or data can also be exported in several standard formats.

3. For example; to change the title on the plot, click the **Title** tab and edit the text box. The title on the plot will change as you edit the text.



4. Close the **Editing** dialog window.

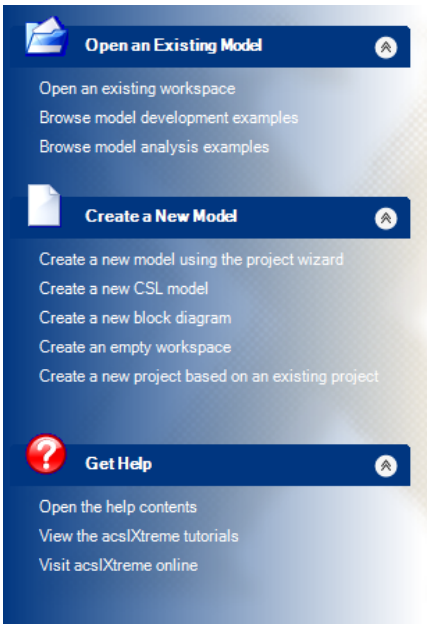
5. Close the workspace by using the menu **File > Close Workspace.**

6. **File > Exit** to exit acslXtreme.

7 Additional Information

7.1 acslXtreme User's Guide

For detailed information on using acslXtreme refer to the acslXtreme User's Guide. The full User's Guide is available in PDF format on the installation CD and in the installation directory under Documentation. It is also available using acslXtreme's Help function under menu **Help > acslXtreme Help** and as a Start Page link '**Open the help contents**'.


Open an Existing Model
Open an existing workspace
Browse model development examples
Browse model analysis examples
Create a New Model
Create a new model using the project wizard
Create a new CSL model
Create a new block diagram
Create an empty workspace
Create a new project based on an existing project
Get Help
Open the help contents
View the acslXtreme tutorials
Visit acslXtreme online

7.2 Technical Support

Technical Support business hours are Monday through Friday, 9:00 AM to 5:00 PM, Eastern Time (US & Canada).

E-Mail

Questions can be sent directly via e-mail at support@AEgisTG.com to the technical support team.

For Technical Support questions and trouble reports about acslXtreme, send email to: support@AEgisTG.com

Telephone

For telephone support, call The AEgis Technologies Group during normal business hours Monday through Friday, 9:00 AM to 5:00 PM, Eastern Time (US & Canada) at: (256) 922-0802.

FAX

You can also fax questions directly to the acslXtreme technical support team. For technical support issues, be sure to list "acslXtreme Support" as the recipient on the cover page. Fax questions to the following number: (256) 922-0904.